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Indian Standard

SPECIFICATION FOR RELAYS FOR ELECTRONICS AND TELECOMMUNICATION EQUIPMENT

PART II REED RELAYS

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(*Continued on page* 2)

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(*Continued from page* 1)

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Indian Standard

SPECIFICATION FOR RELAYS FOR ELECTRONICS AND TELECOMMUNICATION EQUIPMENT

PART II REED RELAYS

0. FOREWORD

0.1 This Indian Standard (Part II) was adopted by the Indian Standards Institution on 20 August 1982, after the draft finalized by the Electromechanical Components for Electronic Equipment Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

0.2 This standard (Part II) covers detailed requirements applicable to different types of reed relays. The general requirements and methods of test are specified in Part I of this standard.

0.3 While preparing this standard, considerable assistance is derived from JSS 50703-1980 Detail specification for relays, reed type, issued by the Directorate of Standardization, Ministry of Defence, India.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

Indian Standard

SPECIFICATION FOR RELAYS FOR ELECTRONICS AND TELECOMMUNICATION EQUIPMENT

PART II REED RELAYS

Section 1 General

1. SCOPE

1.1 This standard (Part II/Sec 1) covers requirements generally applicable to different type of reed relays covered in this standard.

2. TEST SCHEDULE AND REQUIREMENTS

2.1 The test schedule and requirements shall be according to Table 1.

NOTE — Wherever a 'dash' occurs under 'test conditions' or 'requirements' in Table 1, it indicates that details are given in the relevant clause of Part I of this standard.

3. TECHNICAL NOTES

3.1 Some general technical notes on reed relays are given in Appendix A.

TABLE 1 TEST REQUIREMENTS

(*Clause* 2.1)

Sl No.	Test	Cl. Ref in IS : 5051 (Part I)-1982*	Test Condition	Requirement
(1)	(2)	(3)	(4)	(5)
GROUP 0				
i)	Visual examination	7.4.1	—	—
ii)	Dimensions (outline)	7.4.2	—	—
iii)	Coil resistance	7.5	—	*see* relevant Sec
iv)	Static contact resistance	7.6	Load condition—10mA, *Max* at 30 mV open circuit (maximum dc or peak ac)	*see* relevant Sec
v)	Pickup and drop out voltage	7.7	—	*see* relevant Sec
vi)	Contact bounce	7.8	—	*see* relevant Sec

*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

Sl No.	Test	Cl Ref in IS : 5051 (Part I)-1982*	Test Condition	Requirement
(1)	(2)	(3)	(4)	(5)
vii)	Voltage proof	7.9	Duration of test valtage 60 ± 10s for type test and 2s for routine and acceptance test after attainment of voltage requirements. Points of application and test voltages as in relevant Sec	—
viii)	Insulation resistance	7.10	a) Points of measurement — as in (vii) b) Electrification time — 2 min c) Test condition letter — A	1 000 MΩ, *Min*
ix)	Operate and release time	7.11	Rated coil voltage (or current) as in relevant Sec	*see* relevant Sec
x)	Contact noise	7.37	—	Contact noise shall have decayed to less than 0·05 mV peak-to-peak in less than 10 ms
xi)	Cross talk	7.38	—	Attenuation — 20 dB, *Min*
xii)	Capacitance	7.12	—	*see* relevant Sec
xiii)	Conditioning (run in)	7.14	—	—
xiv)	Sealing	7.16	—	For hermetically sealed relays, rate of leakage 100 Pa mm^3/s, *Max*. For relays other than hermetically sealed, there shall be no evidence of leakage
GROUP I				
xv)	Weight	7.4.4	—	*see* relevant Sec
xvi)	Solderability	7.17	Method 1	—

*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

SL No.	TEST	CL REF IN IS : 5051 (PART I)-1982*	TEST CONDITION	REQUIREMENT
(1)	(2)	(3)	(4)	(5)
xvii)	Robustness of terminations	7.18	Tensile test — Tensile load as in relevant Sec	—
xviii)	Impact (bump)	7.19	For electrical loading, rated coil voltage (or current) shall be as in relevant Sec	*see* relevant Sec
	Visual examination	7.4.1	During intermediate measurement, false operation shall not continue for more than 10 ms	—
xix)	Vibration	7.20	Severity as in relevant sec. For electrical loading, rated coil voltage (or current) shall be as in relevant Sec During intermediate measurement, false operation shall not continue for more than 10 ms	—
	a) Visual examination	7.4.1	—	—
	b) Voltage proof	7.9	—	—
	c) Static contact resistance	7.8	—	*see* relevant Sec
	d) Pick up and drop out voltage	7.7	—	*see* relevant Sec
xx)	Impact (shock)	7.2.1	Severity as in relevant sec. For electrical loading, rated coil voltage (or current) shall be as in relevant Sec During intermediate measurement, false operation shall not continue for more than 10 ms	—

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*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

SL No.	TEST	CL REF IN IS : 5051 (PART I)-1982*	TEST CONDITION	REQUIREMENT
(1)	(2)	(3)	(4)	(5)
	a) Visual examination	7.4.1	—	—
	b) Voltage proof	7.9	—	—
	c) Static contact resistance	7.6	—	*see* relevant Sec
	d) Pick up and drop out voltage	7.7	—	*see* relevant Sec
xxi)	Acceleration (steady state)	7.2.2	Severity as in relevant specification. During intermediate measurements, false, operation shall not continue for more than 10 ms	
	a) Visual examination	7.4.1	—	—
	b) Sealing	7.16	—	—
xxii)	Change of temperature	7.2.4	During intermediate measurements, at each temperature extreme during the 5th cycle, at the end of each temperature exposure and the relay still in conditioning temperature, the following measurement shall be made:	
			a) Insulation resistance *see* (viii)	As in (viii), except that at high temperature value is 500 MΩ, *Min*
			b) Pick up and drop voltage *see* (iv)	*see* relevant Sec
			c) Operate and release time *see* (ix)	*see* relevant Sec
	a) Visual examination	7.4.1	—	—
	b) Voltage proof	7.9	—	—

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*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

SL No.	TEST	CL REF IN IS : 5051 (PART I)-1982*	TEST CONDITION	REQUIREMENT
(1)	(2)	(3)	(4)	(5)
xxiii)	Climatic sequence	7.25	—	—
	a) Dry heat	7.25.3	Temperature severity, and rated voltage (or current) as in relevant Sec	—
	b) Damp heat (cyclic), first cycle	7.25.4	1 cycle	—
	c) Cold	7.25.5	Temperature severity as in relevant Sec	—
	d) Low air pressure	7.25.6	Severity as in relevant Sec	*see* relevant Sec
	Voltage proof	7.9	Test voltages as in relevant Sec	There shall be no breakdown, spark or flash-over
	e) Damp heat (cyclic), remaining cycles	7.25.7	—	—
	1) Damp heat (cyclic), severity 2 cycles	7.25.7.1	—	—
	Insulation resistance	7.10	*see* (viii), within 1½ to 2 h recovery	10 MΩ, *Min*
	2) Damp heat (cyclic), severity 6 cycles	7.25.7.2	—	—
	f) Final measurements:			
	1) Visual examination	7.4.1	—	—
	2) Voltage proof	7.9	—	—
	3) Insulation resistance	7.10	—	100 MΩ, *Min*
	4) Sealing	7.16	—	—

*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

Sl No.	Test	Cl Ref in IS : 5051 (Part I)-1982*	Test Condition	Requirement
(1)	(2)	(3)	(4)	(5)
GROUP 2				
xxiv)	Damp heat (steady state)	7.27	During intermediate measurements, insulation resistance — 10 MΩ, *Min* for 21 days severity; and 100 MΩ, *Min* for 56 days severity	—
	a) Voltage proof	7.9	—	—
	b) Insulation resistance	7.10	—	100 MΩ, *Min*
	c) Sealing	7.16	—	*see* xiv
	d) Solderability	7.17	—	—
GROUP 3				
xxv)	Mould growth	7.28	—	—
GROUP 4				
xxvi)	Overload	7.29	—	—
xxvii)	Life (electrical and mechanical)	7.30	For electrical loading, rated voltage (or current) as in relevant Sec	—
	a) Visual examination	7.4.1	—	—
	b) Coil resistance	7.5	—	*see* relevant Sec
	c) Static contact resistance	7.6	—	2 Ω, *Max*
	d) Pick up and drop out voltage	7.7	—	*see* relevant Sec
	e) Operate and release time	7.11	—	*see* relevant Sec
	f) Contact bounce	7.8	—	*see* relevant Sec
	g) Voltage proof	7.9	—	—
	h) Insulation resistance	7.10	—	As in (viii)

*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

SL No.	TEST	CL REF IN IS : 5051 (PART I)-1982*	TEST CONDITION	REQUIREMENT
(1)	(2)	(3)	(4)	(5)
GROUP 5				
xxviii)	Resistance to solvents	7.31	—	—
	a) Static contact resistance	7.6	—	*see* relevant Sec
	b) Voltage proof	7.9	—	—
	c) Insulation resistance	7.9	—	As in (viii)
xxix)	Resistance to soldering heat	7.3.2	—	—
	a) Visual examination	7.4.1	—	—
	b) Contact resistance	7.6	—	*see* relevant Sec
	c) Insulation resistance	7.10	—	As in (viii)
	d) Pick up and drop out voltage	7.7	—	*see* relevant Sec
	e) Coil resistance	7.5	—	*see* relevant Sec
GROUP 6				
xxx)	Magnetic interference	7.33	Adjacent-similar-relay method	—
	a) Pick up and drop out voltage	7.7	—	*see* relevant Sec
xxxi)	Dust (not applicable to hermetically sealed relays)	7.26	—	—
	a) Static contact resistance	7.6	—	*see* relevant Sec
	b) Pick up and drop out voltage	7.7	—	*see* relevant Sec

*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

(*Continued*)

TABLE 1 TEST REQUIREMENTS — *Contd*

SL No.	TEST	CL REF IN IS : 5051 (PART I)-1982*	TEST CONDITION	REQUIREMENT
(1)	(2)	(3)	(4)	(5)
xxxii)	Contact sticking	7.39	—	—
	a) Operate and release time	7.11	Rated voltage (or current) as in relevant Sec	*see* relevant Sec
xxxiii)	Coil life	7.34	—	—
	a) Visual examination	7.4.1	—	—
	b) Operate and release time	7.11	—	*see* relevant Sec
	c) Contact bounce	7.8	—	*see* relevant Sec
	d) Static contact resistance	7.6	—	*see* relevant Sec
	e) Coil resistance	7.5	—	*see* relevant Sec
	f) Voltage proof	7.9	—	*see* relevant Sec
	g) Insulation resistance	7.10	—	As in (viii)
xxxiv)	Salt mist	7.35	—	—
	Visual examination	7.35.1	—	—
CROUP 7				
xxxv)	Minimum current (intermediate current)	7.36	—	—

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*Specification for relays for electronics and telecommunication equipment: Part I General requirements and tests (*first revision*).

APPENDIX A

(*Clause* 3.1)

TECHNICAL NOTES ON REED RELAYS

A-1. ORIENTATION OF CONTACT MOTION

A-1.1 The flat surface of the reed contact shall be parallel to two sides at right angles of the relay housing, unless specified otherwise.

A-2. INTERMETALLIC CONTACT

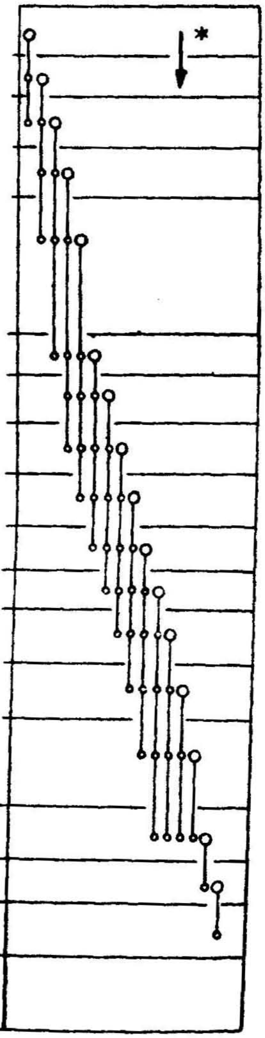
A-2.1 The finishing of metallic areas to be placed in intimate contact by assembly presents a special problem, since intermetallic contact of dissimilar metals results in electrolytic couples which promote corrosion through galvanic action. To provide required protection intermetallic couples are restricted to those permitted by Table 2. This table shows metals and alloys (or plates) by groups which have common electromotive forces (EMF) within 0·05 volts when coupled with a saturated calomel electrode in seawater at room (ambient) temperatures. All members of a group are considered as completely compatible, one with the other. Compatible couples between groups have been specified in Table 2 based on a potential difference of 0·25 V, maximum. Table 2 shows, in addition to EMF against a calomel electrode, a derived "anodic index" with group 1 (gold, etc) as 0 and group 18 (magnesium, etc) as 175. Subtraction of a lower group anodic index gives the EMF difference in hundredths of a volt.

A-2.1.1 *Groups* — Table 2 sets up 18 primary groups. It may be noted that neither the metallurgical similarity or dissimilarity of metals is the parameter for selection of compatible couples. All members within a group, regardless of metallurgical similarity are considered inherently non-susceptible to galvanic action, when coupled with any member within the group, for example, such dissimilar metals as platinum and gold. Similarly such basically dissimilar alloys as austenitic stainless steel, silver-solder, and low brass (all members of group 5) are inherently non-susceptible when coupled together.

A-2.1.2 *Compatibility Graphs* — Permissible couple series are shown in Table 2 by the graphs at the right. Members of groups connected by lines will form permissible couples. The most cathodic member of each series his indicated by '0', the most anodic member is indicated by '0', and the arrow indicates the anodic direction.

TABLE 2 COMPATIBLE COUPLES

(*Clauses* A-2.1, A-2.1.1, A-2.1.2 and A-2.1.4)

Group No. (1)	Metallurgical Category (2)	EMF (V) (3)	Anodic Index (0 01V) (4)	Compatible Couples (5)
1	Gold, solid and plated; gold-platinum alloys; wrought platinum (most cathodic)	+ 0·15	0	
2	Rhodium plated on silver-plated copper	+ 0·05	10	
3	Silver, solid or plated; high silver alloys	0	15	
4	Nickel, solid or plated; monel metal, high nickel-copper alloys	– 0·15	30	
5	Copper, solid or plated; low brasses or bronzes; silver solder; German silver; high copper-nickel alloys; nickel-chromium alloys; austenitic corrosion-resistant steels	– 0·20	35	
6	Commercial yellow brasses and bronzes	– 0·25	40	
7	High brasses and bronzes; naval brass, muntzmetal	– 0·30	45	
8	18 percent chromium type corrosion-resistant steels	– 0·35	50	
9	Chromium, plated; tin, plated; 12 percent chromium type corrosion-resistant steels	– 0·45	60	
10	Tin-plate; terneplate; tin-lead solder	– 0·50	65	
11	Lead, solid or plated; high lead alloys	– 0·55	70	
12	Aluminium, wrought alloys of the duralumin type	– 0·60	75	
13	Iron, wrought grey, or malleable; plain carbon and low alloy steels, armco iron	– 0·70	85	
14	Aluminium, wrought alloys other than duralumin type; aluminium, case alloys of the silicon type	– 0·75	90	
15	Aluminium, cast alloys other than silicon type; cadmium, plated and chromated	– 0·80	95	
16	Hot-dip-zinc plate; galvanized steel	– 1·05	120	
17	Zinc, wrought; zinc base diecasting alloys; zinc, plated	– 1·10	125	
18	Magnesium and magnesium-base alloys, cast or wrought (most anodic)	– 1·60	175	

*Anodic direction.

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A-2.1.3 *Selection of Compatible Couples* — Proper selection of metals in the design of equipment will result in fewer intermetallic contact problems. For example, for sheltered exposure, neither silver nor tin require protective finishes. However, since silver has an anodic index of 15 and tin 65, the EMF generated as a couple is 0·50 volt, which is not allowable by Table 2. In this case other metals or plates will be required. It should be noted that, in intermetallic couples, the member with the higher anodic index is anodic to the member with the lower anodic index and will be susceptible to corrosion in the presence of an electrolytic medium. If the surface area of the cathodic part is significantly greater than that of the anodic part, the corrosive attack on the contact area of the anodic part may be greatly intensified. Material selection for intermetallic contact parts, therefore, should establish the smaller part as the cathodic member of the couple, whenever practicable.

A-2.1.4 *Plating* — When base metals intended for intermetallic contact form couples not allowed by Table 2, they are to be plated with those metals which will reduce the potential difference to that allowed by Table 2.

A-3. INTENDED USE

A-3.1 Relays conforming to this specification are intended for use in dc or ac electronic communication equipment as a means of controlling the making and breaking of circuits for electrically operated equipment and devices. Their prinicipal areas of application are for aircrafts, missiles, spacecrafts and ground support electronic and communication equipments.

Indian Standard

SPECIFICATION FOR RELAYS FOR ELECTRONICS AND TELECOMMUNICATION EQUIPMENT

PART II REED RELAYS

Section 2 Type RR1

1. SCOPE

1.1 This standard (Part II/Sec 2) covers requirements of electrical, dry reed, relays having ratings of 28 V, low level to 500 mA and designated as Type RR1.

2. OUTLINE DIMENSIONS

2.1 The outline dimensions and pin arrangements are given in Fig. 1 and 2 respectively.

3. CLIMATIC CLASSIFICATION

3.1 The climatic classification shall be as follows:

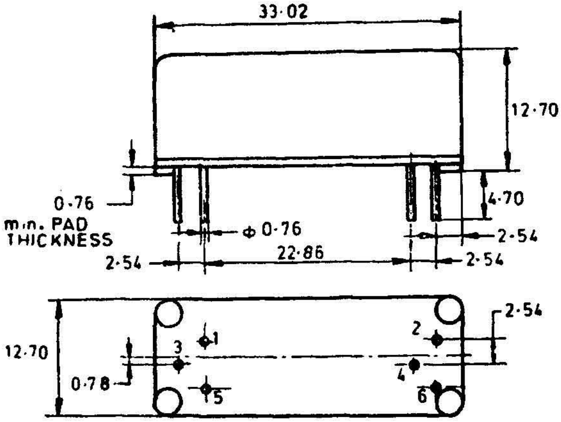
Temperature severity	55/85
Damp heat (steady state)	56 days
Damp heat (cyclic)	6 cycles
Low air pressure	4·4 kPa
Acceleration (steady state)	170 m/s^2
Vibration	10 to 2 000 Hz
Impact (shock)	1 km/s^2

4. ELECTRICAL CHARACTERISTICS

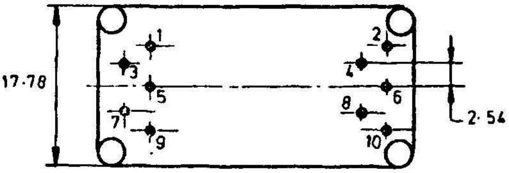
4.1 Contact Rating — 500 mA, 28V.

4.2 Static Contact Resistance — 0·2Ω, *Max*. During and after life and minimum current tests, the value shall be 4Ω, *Max* when load conditions are rated current and voltage.

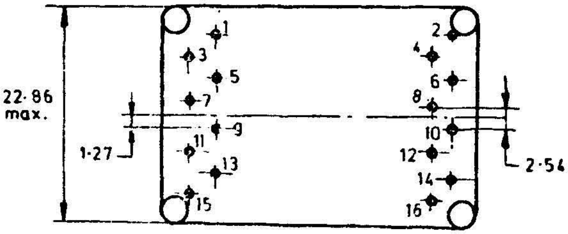
4.3 Minimum Current — 10 mA at 12V (dc), *Max*; 2 000 000 operations at 900 to 1 200 operations per minute.



CONFIGURATION-1



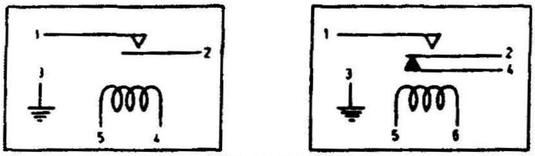
CONFIGURATION-2



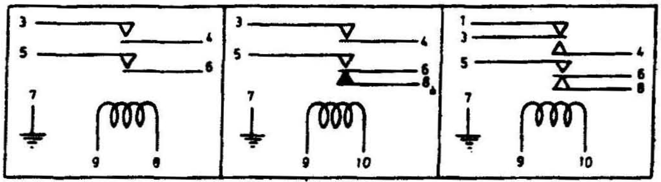
CONFIGURATION-3

All dimensions in millimetres.

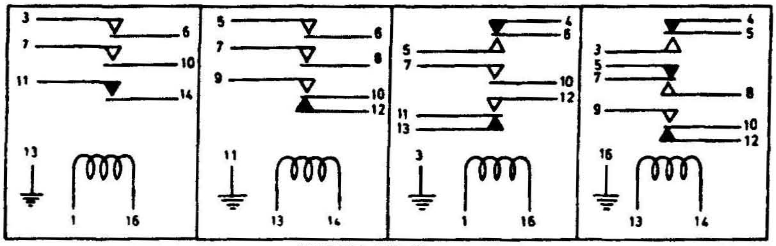
FIG. 1 OUTLINE DIMENSIONS



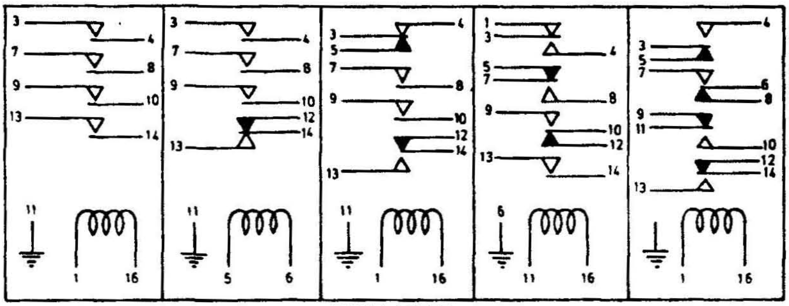
SINGLE POLE



DOUBLE POLE



THREE POLE



FOUR POLE

FIG. 2 PIN ARRANGEMENT DIAGRAMS

4.4 Life

Load Current mA	*Resistive Load* (millions of operations)		*Cycling rate* operations/second
	12 V	28 V	
500	1	0·5	3-5
250	10	5	15-20
10 (low level)	100 at 50 mV		60 (approx.)

4.5 Over Load — Resistive load at 2 times the rated current.

4.6 Voltage Proof

	Sea Level V(rms)	*Low Air Pressure* V(rms)
Between case, frame, or enclosure and all contacts	500	200
Between case, frame, or enclosure and coil	500	200
Between all contacts and coil	500	200
Between open contacts in the energised and unenergised position	250	200
Between contact poles	500	200

4.7 Capacitance — 2 pF, *Max.*

4.8 Coil Life — Not applicable.

5. OPERATING CHARACTERISTICS

5.1 Operate Time (including bounce) — 1 ms, *Max* at 25°C; and 2 ms, *Max* at 85°C.

5.2 Release Time (including bounce) — 1 ms, *Max*, over the temperature range.

5.3 Contact Bounce — 1 ms, *Max.*

6. ROBUSTNESS OF TERMINATIONS

6.1 Tensile Load — 3·9 N.

7. WEIGHT

7.1 The weight of relays is given below:

a) 1 pole : 12 g, *Max*;
b) 2 pole : 18 g, *Max*;
c) 3 pole : 22 g, *Max*; and
d) 4 pole : 24 g, *Max.*

8. TECHNICAL DATA

8.1 *See* Table 1.

TABLE 1 TECHNICAL DATA

Coil Voltage V (dc)	Pick up Voltage V (dc)	Drop Out Voltage V (dc)	Coil Resistance Ω + 10 percent	Number of Poles	Number of Capsules (Contact Arrangement)		Case Size Pin Arrangement Configuration
					Form A	Form B	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
6	4	0·8	100	1	1	0	1
			70	1	0	1	1
			40	2	2	0	2
			40	2	1	1	2
			40	2	0	2	2
			30	3	3	0	3
			30	3	2	1	3
			30	3	1	2	3
			30	3	0	3	3
			22	4	4	0	3
			22	4	3	1	3
			22	4	2	2	3
			22	4	1	3	3
			22	4	0	4	3
12	8	1	420	1	1	0	1
			420	1	0	1	1
			280	2	2	0	2
			185	2	1	1	2
			185	2	0	2	2
			130	3	3	0	3
			130	3	2	1	3
			130	3	1	2	3
			130	3	0	3	3
			100	4	4	0	3
			100	4	3	1	3
			100	4	2	2	3
			100	4	1	3	3
			100	4	0	4	3
26·5	18·0	2·5	2 350	1	1	0	1
			1 450	1	0	1	1
			925	2	2	0	2
			925	2	1	1	2
			925	2	0	2	2
			650	3	3	0	3
			650	3	2	1	3
			650	3	1	2	3
			650	3	0	3	3
			460	4	4	0	3
			460	4	3	1	3
			460	4	2	2	3
			460	4	1	3	3
			460	4	0	4	3

Indian Standard

SPECIFICATION FOR RELAYS FOR ELECTRONICS AND TELECOMMUNICATION EQUIPMENT

PART II REED RELAYS

Section 3 Type RR2

1. SCOPE

1.1 This standard (Part II/Sec 3) covers requirements of electrical, dry reed, relays having ratings of 200 V, 500 mA, 14 W, *Max* and designated as Type RR2.

2. OUTLINE DIMENSIONS

2.1 The outline dimensions are given in Fig. 1.

3. CLIMATIC CLASSIFICATION

3.1 The climatic classification shall be as follows:

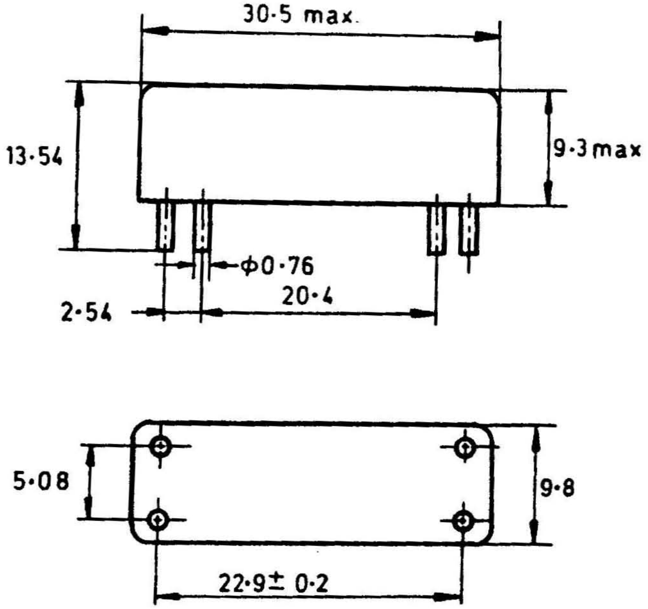
Temperature severity	40/85
Damp heat (steady state)	21 days
Damp heat (cyclic)	2 cycles
Low air pressure	4·4 kPa
Acceleration (steady state)	170 m/s^2
Vibration	10 to 2 000 Hz
Impact (shock)	1 km/s^2

4. ELECTRICAL CHARACTERISTICS

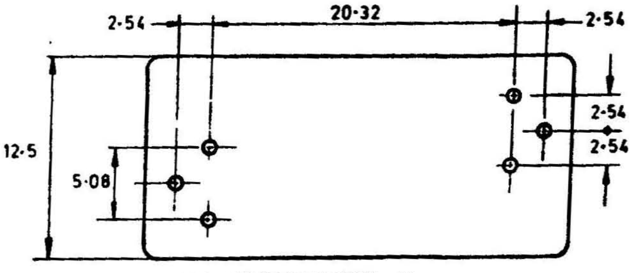
4.1 Contact Ratings — 500 mA, *Max*,
200 V, *Max*, and
14 W, *Max*.

4.2 Static Contact Resistance — 250 mΩ.

4.3 Minimum Current — Not applicable.



CONFIGURATION – 1



CONFIGURATION – 2

All dimensions in millimetres.

FIG. 1 OUTLINE DIMENSIONS

4.4 Life

Load current mA	*Voltage* V	*No. of Operations*	*Cycling Rate Operations/second*
500	28	1×10^6	3-5
70	200	1×10^6	3-5

4.5 Overload — Resistive load at 2 times the rated current.

4.6 Voltage Proof

	Sea Level V (rms)	*Low Air Pressure* V (rms)
Between case, frame or enclosure and all contacts	500	200
Between case, frame, or enclosure and coil	500	200
Between all contacts and coil	500	200
Between open contacts in the energised and unenergised position	250	200
Between contact poles	500	200

4.7 Capacitance — 2 pF, *Max.*

5. OPERATING CHARACTERISTICS

5.1 Operate Time — 1 ms.

5.2 Release Time — 1 ms.

5.3 Contact Bounce — 1 ms.

6. ROBUSTNESS OF TERMINATIONS

6.1 Tensile Load — 3 9 N.

7. WEIGHT

7.1 The weight is given below:

a) 1 pole : 7 g, *Max*, and
b) 2 pole : 9 g, *Max.*

8. TECHNICAL DATA

8.1 *See* Table 1.

TABLE 1 TECHNICAL DATA

COIL VOLTAGE V (dc)	PICK UP VOLTAGE V (dc)	DROP OUT VOLTAGE V (dc)	COIL RESISTANCE Ω	NUMBER OF POLES	CONTACT ARRANGEMENT	CASE SIZE PIN ARRANGEMENT
(1)	(2)	(3)	(4)	(5)	(6)	(7)
6	4·2	1·2	300	1	Form A	1
			150	2	Form A	2
9	6·3	1·8	700	1	Form A	1
			330	2	Form A	2
12	8·4	2·4	1 200	1	Form A	1
			600	2	Form A	2
24	16·8	4·8	2 800	1	Form A	1
			2 350	2	Form A	2

NOTE — If required, the pick up voltage may be 80 percent of the coil voltage.

INDIAN STANDARDS

ON

ELECTROMECHANICAL COMPONENTS FOR ELECTRONIC EQUIPMENT

IS :

1885 (Part XXVI)-1968 Electrotechnical vocabulary : Part XXVI Telecommunication relays

2628 (Part I)-1964 Rotary wafer switches (low current rating) : Part I Tests and general requirements

2628 (Part II)-1967 Rotary wafer switches (low current rating) : Part II Rotary wafer switches with central mounting

3354 (Part I)-1965 Valve sockets : Part I General requirements and tests

3354 (Part II)-1965 Valve sockets : Part II Dimensions and construction of gauges and tools

3354 (Part III)-1967 Valve sockets : Part III Valve sockets for octal base

3354 (Part IV)-1967 Valve sockets : Part IV Valve sockets for 9-pin miniature base

3452 (Part I)-1966 Toggle switches : Part I general requirements and tests

3452 (Part II)-1970 Toggle switches : Part II Toggle switches, Type I and Type II

3544-1966 General I requirements and test for tag strips

4007 (Part I)-1982 Terminals for electronic equipment : Part I General requirements and tests (*first revision*)

4586 (Part I)-Dimensions of spindles and mounting arrangements for spindle operated electronic components : Part I Spindles

- (Part I/Sec 1)-1978 Section 1 General and definitions
- (Part I/Sec 2)-1978 Section 2 Plain round spindles
- (Part I/Sec 3)-1978 Section 3 Flatted spindle
- (Part I/Sec 4)-1978 Section 4 Slotted spindle
- (Part I Sec 5)-1978 Section 5 Hollow spindle
- (Part I/Sec 6)-1978 Section 6 Coupling spindle
- (Part I/Sec 7)-1978 Section 7 Concentric spindle
- (Part I/Sec 8)-1978 Section 8 Double flatted spindle
- (Part I/Sec 9)-1978 Section 9 Knurled spindle
- (Part I/Sec 10)-1978 Section 10 Slotted and knurled spindle

4586 Dimensions of spindles and mounting arrangements for spindle operated electronic components : Part II Mounting arrangements

- (Part II/Sec 1)-1980 Section 1 Components and panel cutouts
- (Part II/Sec 2)-1980 Section 2 Fixing nuts

4794 (Part I)-1968 Push-button switches : Part I General requirements and tests

4795 (Part I)-1968 Holders for indicator lamps for electronic and telecommunication equipment : Part I General requirements and tests

4795 (Part II)-1978 Holders for indicator lamps for electronic and telecommunication equipment : Part II Type E10, E14 and BA9

5033-1969 Telescopic aerials for portable radio receivers

5051 (Part I)-1982 Relays for electronics and telecommunication equipment : Part I General requirements and tests (*first revision*)

IS :

5051 (Part II)-1982 Relays for electronics and telecommunication equipment : Part II Reed Relays

6089 (Part I)-1971 Sensitive switches : Part I General requirements and tests

6102 (Part I)-1971 Finger knobs used in electronic and telecommunication equipment : Part I General requirements and tests

7542 (Part I)-1974 Tube shields : Part I General requirements and tests

7751 (Part I)-1975 Slide switches : Part I General requirements and tests

9606-1980 Dimensions of panels and racks (482·6 mm system)